WHAT IS CLAIMED IS:

1. A method of obtaining single spheres for use in making self assembled opal structures, comprising:

obtaining a plurality of spherical particles;

placing the spherical particles in a centrifuge;

spinning the centrifuge to apply centrifugal force to the spherical particles; and

separating single spheres from doublets using a relative difference in sedimentation velocity in response to centrifugal force.

2. The method of claim 1 including depositing the single spheres onto a substrate.

3. The method of claim 2 wherein the depositing comprising drying the substrate through a meniscus at a declination angle.

4. The method of claim 1 including forming a three-dimensional photonic crystal with the single spheres.

5. The method of claim 4 including providing a waveguide within the three-dimensional photonic crystal.

6. A method of making a three-dimensional photonic crystal comprising:

providing a plurality of spheres carried in a suspension;

drawing a substrate through a meniscus formed in the suspension and at a declination angle relative to the meniscus.

7. The method of claim 6 wherein the angle is about 60°.

8. The method of claim 6 including burying a waveguide within the photonic crystal structure.

9. A method of making a photonic crystal structuring including a waveguide, comprising:

placing a waveguide support on a substrate;

placing a waveguide on the waveguide support;

burying the waveguide in a photonic bandgap crystal.

10. The method of claim 9 including forming an inverse opal structure.

11. A method of making a three-dimensional photonic crystal including a buried waveguide, comprising:

depositing a first layer of photonic crystal on a substrate;

depositing a waveguide on the first layer of photonic crystal;

depositing a second layer of photonic crystal on the first layer of photonic crystal and the waveguide.

12. The method of the claim 11 including forming an inverse opal structure in the photonic crystal.